

IN THE CLAIMS

1. (currently amended) A process for decreasing energy usage in a polyethylene terephthalate production process ~~where following polycondensation, polyethylene terephthalate is pelletized and crystallized,~~ comprising

a) solidifying a molten polyethylene terephthalate to form amorphous polyethylene terephthalate pellets and cooling the pellets to a temperature from about 50°C to about the T_g of the polyethylene terephthalate to form warm polyethylene terephthalate pellets; and

b) conveying said warm polyethylene terephthalate pellets to a crystallizer, wherein the temperature of the warm polyethylene terephthalate pellets is in the range of about 50° C to below the T_g of the polyethylene terephthalate at an inlet of the crystallizer.

2. (previously presented) The process of claim 1, wherein said step of conveying comprises introducing said warm pellets into a stream of water having a temperature of between about 50°C and 90°C.

3. (original) The process of claim 2, wherein prior to said step of introducing said warm pellets into said crystallizer, water is removed from said warm polyethylene terephthalate pellets.

4. (original) The process of claim 3, wherein water is removed prior to or during said step of conveying.

5. (original) The process of claim 3, wherein water is removed by means of a foraminous screen.

6. (original) The process of claim 3, wherein water is removed in a mechanical dryer.

7. (original) The process of claim 5, wherein water is removed in a mechanical dryer.

8. (original) The process of claim 2, wherein said warm pellets have a temperature in the range of 70°C to 90°C at the inlet to said crystallizer.
9. (original) The process of claim 2, wherein said stream of water comprises water recirculated from a water removal step.
10. (original) The process of claim 6, wherein no heat energy is added to said dryer.
11. (original) The process of claim 1, wherein said step of conveying comprises introducing said warm pellets from said step of pelletizing into a gas stream.
12. (original) The process of claim 11, wherein said gas stream, prior to contact with said pellets, has a temperature in the range of 40°C to 90°C.
13. (original) The process of claim 11, wherein said gas stream, prior to contact with said pellets, has a temperature in the range of 50°C to 70°C.
14. (original) The process of claim 11, wherein prior to said step of introducing said warm pellets into said crystallizer, water from said steps of solidifying and/or pelletizing is removed from said warm polyethylene terephthalate pellets.
15. (original) The process of claim 14 wherein said water is removed in a mechanical dryer.
16. (original) The process of claim 11, wherein said warm pellets have a temperature in the range of 70°C to 90°C at the inlet to said crystallizer.
17. (previously presented) The process of claim 1, wherein prior to said step of pelletizing, water is removed from said solidified pellets by a blast of air.

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18. (currently amended) The process of claim 1, wherein said warm polyethylene terephthalate pellets are conveyed ~~directly~~ from step a) to said crystallizer without intermediate storage.

19. (new) The process of claim 1, wherein said step of conveying comprises introducing said warm pellets from step a) into a stream of water, and thereafter conveying said pellets in a stream of gas to the crystallizer.

20. (new) A process for decreasing energy usage in a polyethylene terephthalate production process comprising:

a) solidifying a molten polyethylene terephthalate to form amorphous polyethylene terephthalate pellets and cooling the pellets to a temperature from about 50° C to about the T_g of the polyethylene terephthalate to form warm polyethylene terephthalate pellets; and

b) conveying said warm polyethylene terephthalate pellets to a crystallizer, wherein the temperature of the warm polyethylene terephthalate pellets is in a range of about 50° C to below the T_g of the polyethylene terephthalate inlet of the crystallizer; and

c) crystallizing said pellets in a crystallizer:

i) over a period of 30 to 90 minutes; or

ii) at a temperature between 160° C and 190° C; or

iii) both.

21. (new) The process of claim 20, wherein the pellets are crystallized at a temperature within a range of 160°C to 190°C.

22. (new) The process of claim 21, wherein said step of conveying comprises introducing said warm pellets into a stream of water having a temperature of between about 50°C and 90°C.

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23. (new) The process of claim 22, wherein prior to said step of introducing said warm pellets into said crystallizer, water is removed from said warm polyethylene terephthalate pellets.
24. (new) The process of claim 22, wherein water is removed prior to or during said step of conveying.
25. (new) The process of claim 22, wherein water is removed by means of a foraminous screen.
26. (new) The process of claim 24, wherein water is removed in a mechanical dryer.
27. (new) The process of claim 22, wherein water is removed in a mechanical dryer.
28. (new) The process of claim 27, wherein no heat energy is added to said dryer.
29. (new) The process of claim 22, wherein said stream of water comprises water recirculated from a water removal step.
30. (new) The process of claim 20, wherein said warm pellets are introduced into the crystallizer at a temperature in the range of 70°C to 90°C.
31. (new) The process of claim 20, wherein said step of conveying comprises introducing said warm pellets from step a) into a gas stream.
32. (new) The process of claim 31, wherein said gas stream, prior to contact with said pellets, has a temperature in the range of 40°C to 90°C.

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33. (new) The process of claim 31, wherein said gas stream, prior to contact with said pellets, has a temperature in the range of 50°C to 70°C.

34. (new) The process of claim 20, wherein said warm polyethylene terephthalate pellets are conveyed from step a) to said crystallizer without intermediate storage.

35. (new) The process of claim 20, wherein said pellets are crystallized over a period of time ranging from 30 minutes to 90 minutes.

36. (new) The process of claim 20, wherein said pellets are crystallized over a period of time ranging from 30 minutes to 90 minutes at a temperature of 160° C and 190° C.

37. (new) A process for decreasing energy usage in a polyethylene terephthalate production process comprising:

a) solidifying a molten polyethylene terephthalate to form amorphous polyethylene terephthalate pellets and cooling the pellets to a temperature from about 50°C to about the T_g of the polyethylene terephthalate to form warm polyethylene terephthalate pellets; and

b) introducing the warm pellets into a stream of gas, and conveying said warm pellets in the stream of gas to a crystallizer, wherein the temperature of the warm polyethylene terephthalate pellets is in the range of about 50° C to below the T_g of the polyethylene terephthalate at an inlet of the crystallizer.

38. (new) The process of claim 37, wherein said gas stream, prior to contact with said warm pellets, has a temperature in the range of 40°C to 90°C.

39. (new) The process of claim 37, wherein said gas stream, prior to contact with said warm pellets, has a temperature in the range of 50°C to 70°C.

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40. (new) The process of claim 37, wherein said warm pellets with water are combined from the solidification in step a).

41. (new) The process of claim 40, for the comprising removing water from the pellets prior to introducing the pellets into the crystallizer.

42. (new) The process of claim 41, wherein said water is removed in a mechanical dryer.

43. (new) The process of claim 42, wherein no heat energy is added to the mechanical dryer.

44. (new) The process of claim 37, wherein said warm pellets are introduced into the crystallizer at a temperature in the range of 70°C to 90°C.

45. (new) The process of claim 37, wherein said warm polyethylene terephthalate pellets are conveyed from step a) to said crystallizer without intermediate storage.

46. (new) The process of claim 37 further comprising crystallizing the warm polyethylen terephthalate pellets at a temperature in a range of 160° C to 190° C.

47. (new) The process of claim 37 further comprising crystallizing the warm polyethylene terephthalate pellets over a time period between 30 minutes to 90 minutes.

48. (new) The process of claim 37, comprising introducing the warm pellets from step a) into a stream of water, separating water from the pellets and conveying the warm pellets in the stream of gas to the crystallizer.